OIPE

Input Set : A:\001dv1.txt
Output Set: N:\CRF3\08022001\I912020.raw

ENTERED

```
    4  <110> APPLICANT: Zyskind, Judith
    5        Ohlsen, Kari L.
    6        Trawick, John
    7        Forsyth, R. Allyn
    8        Froelich, Jamie M.
    9        Carr, Grant J.
   10        Yamamoto, Robert T.
   11        Xu, H. Howard
   14  <120> TITLE OF INVENTION: GENES IDENTIFIED AS REQUIRED FOR PROLIFERATION IN
   15        ESCHERICHIA COLI
   17  <130> FILE REFERENCE: ELITRA.001DV1
C-->19  <140> CURRENT APPLICATION NUMBER: US/09/912,020
C-->19  <141> CURRENT FILING DATE: 2001-07-23
   19  <150> PRIOR APPLICATION NUMBER: 09/492,709
   21  <151> PRIOR FILING DATE: 2000-01-27
   23  <150> PRIOR APPLICATION NUMBER: 60/117,405
   25  <151> PRIOR FILING DATE: 1999-01-27
   27  <160> NUMBER OF SEQ ID NOS: 485
   29  <170> SOFTWARE: FastSEQ for Windows Version 3.0
   31  <210> SEQ ID NO: 1
   32  <211> LENGTH: 159
   33  <212> TYPE: DNA
   34  <213> ORGANISM: E. Coli
   36  <400> SEQUENCE: 1
   37  caggtggtat ggaaacccaa aatggagacg ggaagctgaa ccagatagtt actggaggtg       60
   38  atcaccagca gatgaaataa cgataaccag aacaacgcct tatagcgttg agtttgcgag      120
   39  aaaacgttca tattgtacct ttttgattaa ccattgggg                             159
   41  <210> SEQ ID NO: 2
   42  <211> LENGTH: 696
   43  <212> TYPE: DNA
   44  <213> ORGANISM: E. Coli
   46  <220> FEATURE:
   47  <221> NAME/KEY: misc_feature
   48  <222> LOCATION: (1)...(696)
   49  <223> OTHER INFORMATION: n = A,T,C or G
   51  <400> SEQUENCE: 2
   52  gattacatca agcgcgcggt gggtttaccg ggcgataaag tcacttacga tccggtctca       60
   53  aaagagctga cgattcaacc gggatgcagt tccggccagg cgtgtgaaaa cgcgctgccg      120
   54  gtcacctact caaacgtgga accgagcgat ttcgttcaga ccttctcacg ccgtaatggt      180
   55  ggggaagcga ccagcggatt ctttgaagtg ccgaaaaacg aaaccaaaga aaatggaatt      240
   56  cgtctttccg agcgtaaaga gacactgggt gatgtgacgc accgcattct gacagtgccg      300
   57  attgcgcagg atcaggtggg gatgtattac cagcagccag ggcaacaact ggcaacctgg      360
   58  attgttcctc cgggacaata cttcatgatg ggcgacaacc gcgacaacag cgcggacagc      420
W-->59  cgttactggg gctttgtgcc ngaagcgaat ctggtcggtc nggcaacggc tatctggatg      480
W-->60  aacttcgata accaagaagg cgaatggccg aatggtctgc cctaantcgc attggcgnnt      540
W-->61  ccnttaatan ccacttcctt cnctttgtcc ccttatggca acacttaatt tattntaaan      600
W-->62  taatcncccg tggctnacaa atccccgcct tttnttaaaa atttccccna anttaaggtt      660
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RAW SEQUENCE LISTING   DATE: 08/02/2001
PATENT APPLICATION: US/09/912,020   TIME: 10:50:18

Input Set : **A:\001dv1.txt**
Output Set: **N:\CRF3\08022001\I912020.raw**

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W--> 63    ggcctccagt tgcccgnccc aaacactttg gnccccc                    696
     65  <210> SEQ ID NO: 3
     66  <211> LENGTH: 681
     67  <212> TYPE: DNA
     68  <213> ORGANISM: E. Coli
     70  <220> FEATURE:
     71  <221> NAME/KEY: misc_feature
     72  <222> LOCATION: (1)...(681)
     73  <223> OTHER INFORMATION: n = A,T,C or G
     75  <400> SEQUENCE: 3
     76   ctgcagggta atgtcgccat taaactggcg caggcagcca aagagttgct ccgcttctac    60
     77   ccagtcggca gcgacaactt gcgttaaagt cgcaaaatta tcatctgcac tcactgcgtg   120 .
     78   acgtaagcgg atggagtggc cggaaacctc atagtgaccg cccaccagtt ggcctgcatc   180
     79   gctttgtagc gtacgcgcgg cattggcaat aagattcaga tactcagact cttccggggc   240
     80   cttcgccagc ataaaagagg aggatgctcg cgtatgcagc aactgctcca gcgcaaattg   300
     81   cagccgcggt tgagtatcac tgaataaagg atcgttttcg tcaatcaaat gtggctgagc   360
     82   aaatatttcc tgatagctat cggtatcagg aaccaggtca cgccatgcaa gtttcgtaat   420
W--> 83   ggtcaaagtt gatgtttttt agtctgttgt caaagccgcn attataccng taaccggcac   480
     84   tacagcacac gtagaaagca cccgacaata ctcctggcat gggcgttaaa gctcacagga   540
W--> 85   tggagatctt ttcttcactg gcctaaaaag ctgatattct gtaaagagtt acacngtaac   600
W--> 86   attgagatcg ctatgaaata tcaacaactt ggaaaatctt gnaaagcngg ttggaaaatg   660
     87   gaaagtatct ggttaagaag c                                             681
     89  <210> SEQ ID NO: 4
     90  <211> LENGTH: 289
     91  <212> TYPE: DNA
     92  <213> ORGANISM: E. Coli
     94  <400> SEQUENCE: 4
     95   ggcagaattt tacgctgacc aatgacgcga cgacgtggca tggaaatact ccgttgttaa    60
     96   ttcaggattg tccaaaactc tacgagttta gtttgacatt taagttaaaa cgtttggcct   120
     97   tacttaacgg agaaccatta agccttagga cgcttcacgc catacttgga acgagcctgc   180
     98   ttacggtctt taacgccgga gcagtcaagc gcaccacgta cggtgtggta acgaacaccc   240
     99   gggaggtctt taacacgacc gtcacggatc aggatcacgg agtgctcct                289
    101  <210> SEQ ID NO: 5
    102  <211> LENGTH: 815
    103  <212> TYPE: DNA
    104  <213> ORGANISM: E. Coli
    106  <220> FEATURE:
    107  <221> NAME/KEY: misc_feature
    108  <222> LOCATION: (1)...(815)
    109  <223> OTHER INFORMATION: n = A,T,C or G
    111  <400> SEQUENCE: 5
    112   gggagcttac atcagtaagt gaccgggatg agcgagcgaa gataacgcat ctgcggcgcg    60
    113   aaatatgaag ggggagagcc cttatagacc aggtagtaca cgtttggtta gggggcctgc   120
    114   atatggcccc cttttttcact tttatatctg tgcggtttaa tgccgggcag atcacatctc   180
    115   cgaggatttt agaatggctg aaattaccgc atccctggta aaagagctgc gtgagcgtac   240
    116   tggcgcaggc atgatggatt gcaaaaaagc actgactgaa gctaacggcg acatcgagct   300
    117   ggcaatcgaa aacatgcgta agtccggtgc tattaaagca gcgaaaaaag caggcaacgt   360
    118   tgctgctgac ggcgtgatca aaaccaaaat cgacggcaac tacggcatca ttctggaagt   420
    119   taactgccag actgacttcg ttgcaaaaga cgctggtttc caggcgttcg cagacaaagt   480
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          RAW SEQUENCE LISTING                DATE: 08/02/2001
          PATENT APPLICATION:  US/09/912,020  TIME: 10:50:18

          Input Set : A:\001dvl.txt
          Output Set: N:\CRF3\08022001\I912020.raw

       120  tctggacgca gctgttgctg gcaaaatcac tgacgttgaa gttctgaaag cacagttcga   540
       121  agaagaacgt gttgcgctgg tagcgaaaat tggtgaaaac atcaacattc gccgcgttgc   600
       122  tgcgctggaa ggcgacgttc tgggttctta tcagcacggt gcgcgtatcg gccgttctgg   660
       123  ttgctgctaa aagcgctgac gaagaactgg ttaaacacat cgttttgacc tttgttgcaa   720
W--> 124  gccaagccag aattcagaga aactttccgc ttcaccggag gtcccaccca canggancccc   780
W--> 125  cgattttntc agcatggtgg tcttcctncg gagtt                               815
       127 <210> SEQ ID NO: 6
       128 <211> LENGTH: 403
       129 <212> TYPE: DNA
       130 <213> ORGANISM: E. Coli
       132 <400> SEQUENCE: 6
       133  caacactatt ttgttgaccg gaaaatggaa cactttccgc aatgcctgtt gctatcacgc    60
       134  ttaaaccatt tcattgcgat ttacacagaa cggacgtcct gtcgcagtat attaagtcgt   120
       135  cgatagaaac aagcattgaa aggcacagca gtagtcaaac agtgtgaaac gctactggcg   180
       136  ccttacagcg caaaaaggct ggtgactaaa aagtcaccag ccatcagcct gatttctcag   240
       137  gctgcaaccg gaagggttgg cttatttaac ttcaacttca gcgccagctt cttccagagc   300
       138  tttttttcagt gcttctgcgt cgtctttgct cacgccttct ttcagagcag ccggtgcaga   360
       139  ttctaccagg tctttagctt ctttcagacc caggccagtt gcg                      403
       141 <210> SEQ ID NO: 7
       142 <211> LENGTH: 149
       143 <212> TYPE: DNA
       144 <213> ORGANISM: E. Coli
       146 <400> SEQUENCE: 7
       147  gagctttttt cagtgcttct gcgtcgtctt tgctcacgcc ttctttcaga gcagccggtg    60
       148  cagattctac caggtctttta gcttctttca gacccaggcc agttgcgcca cgtactgctt   120
       149  tgataacagc aactttgtta gcgccagca                                      149
       151 <210> SEQ ID NO: 8
       152 <211> LENGTH: 742
       153 <212> TYPE: DNA
       154 <213> ORGANISM: E. Coli
       156 <220> FEATURE:
       157 <221> NAME/KEY: misc_feature
       158 <222> LOCATION: (1)...(742)
       159 <223> OTHER INFORMATION: n = A,T,C or G
       161 <400> SEQUENCE: 8
       162  ccatctgtcc attgagcgga cagtttgtgc aacactattt tgttgaccgg aaaatggaac    60
       163  actttccgca atgcctgttg ctatcacgct taaaccattt cattgcgatt tacacagaac   120
       164  ggacgtcctg tcgcagtata ttaagtcgtc gatagaaaca agcattgaaa ggcacagcag   180
       165  tagtcaaaca gtgtgaaacg ctactggcgc cttacagcgc aaaaaggctg gtgactaaaa   240
       166  agtcaccagc catcagcctg atttctcagg ctgcaaccgg aagggttggc ttatttaact   300
       167  tcaacttcag cgccagcttc ttccagagct ttttttcagtg cttctgcgtc gtctttgctc   360
       168  acgccttctt tcagagcagc cggtgcagat tctaccaggt ctttagcttc tttcagaccc   420
       169  aggccagttg cgccacgtac tgctttgata acagcaactt gttagcgcc agcagctttc   480
W--> 170  agaattacgt cgaattcagt tntttcttca gcagcttcaa ccgggccagc agctacagct   540
       171  acagcagcag caagcggaaa caccgaattt ttcttccatt gcagagatca gttctacaac   600
       172  cgtccattac agacatagct gcaactgctt caatgatttt gatctttagt ggatagacat   660
W--> 173  ttaaattgtt cctgaattat caagaaataa gtnttatacg taagccgaaa tgcgttaaaa   720
W--> 174  aagataactg ngattaaagc ag                                             742
       176 <210> SEQ ID NO: 9
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RAW SEQUENCE LISTING   DATE: 08/02/2001
PATENT APPLICATION: US/09/912,020   TIME: 10:50:19

Input Set : A:\001dv1.txt
Output Set: N:\CRF3\08022001\I912020.raw

```
177 <211> LENGTH: 421
178 <212> TYPE: DNA
179 <213> ORGANISM: E. Coli
181 <400> SEQUENCE: 9
182   agtagtcaaa cagtgtgaaa cgctactggc gccttacagc gcaaaaaggc tggtgactaa    60
183   aaagtcacca gccatcagcc tgatttctca ggctgcaacc ggaagggttg gcttatttaa   120
184   cttcaacttc agcgccagct tcttccagag cttttttcag tgcttctgcg tcgtctttgc   180
185   tcacgccttc tttcagagca gccggtgcag attctaccag gtctttagct tctttcagac   240
186   ccaggccagt tgcgccacgt actgctttga taacagcaac tttgttagcg ccagcagctt   300
187   tcagaattac gtcgaattca gttttttctt cagcagcttc aaccgggcca gcagctacag   360
188.  ctacagcagc agcagcggaa acaccgaatt tttcttccat tgcagagatc agttctacaa   420
189   c                                                                  421
191 <210> SEQ ID NO: 10
192 <211> LENGTH: 126
193 <212> TYPE: DNA
194 <213> ORGANISM: E. Coli
196 <400> SEQUENCE: 10
197   agagcttttt tcagtgcttc tgcgtcgtct ttgctcacgc cttctttcag agcagccggt    60
198   gcagattcta ccaggtcttt agcttctttc agacccaggc cagttgcgcc acgtactgct   120
199   ttgata                                                             126
201 <210> SEQ ID NO: 11
202 <211> LENGTH: 262
203 <212> TYPE: DNA
204 <213> ORGANISM: E. Coli
206 <220> FEATURE:
207 <221> NAME/KEY: misc_feature
208 <222> LOCATION: (1)...(262)
209 <223> OTHER INFORMATION: n = A,T,C or G
211 <400> SEQUENCE: 11
212      ctgcaaccgg aagggttggc ttatttaact tcaacttcag cgccagcttc ttccagagct    60
W--> 213 ttttcagtg cttctgcgtc gtctttgctc acgccttctt tcagagcagc cgntgcagat   120
214      tctaccaggt ctttagcttc tttcagaccc aggccagttg cgccacgtac tgctttgata   180
215      acagcaactt tgttagcgcc agcagctttc agaattacgt cgaattcagt tttttcttca   240
216      gcagcttcaa ccgggccagc ag                                           262
218. <210> SEQ ID NO: 12
219 <211> LENGTH: 202
220 <212> TYPE: DNA
221 <213> ORGANISM: E. Coli
223 <220> FEATURE:
224 <221> NAME/KEY: misc_feature
225 <222> LOCATION: (1)...(202)
226 <223> OTHER INFORMATION: n = A,T,C or G
228 <400> SEQUENCE: 12
229      gcgcataccc tgcagcatcg gcccgatgga gatcaggtcg gcagaacgct gtaccgcttt    60
W--> 230 gtaggtggtg ttaccggtgn tcagatccgg gaagatgaac acggtagcgc gacctgcaac   120
W--> 231 cggagagttc ggcgctttgg attncgcaac gtcagccatt accgcagcgt cgtactgcag   180
232      cggaccggcg atcatcaggt ca                                           202
234 <210> SEQ ID NO: 13
235 <211> LENGTH: 261
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RAW SEQUENCE LISTING   DATE: 08/02/2001
PATENT APPLICATION: US/09/912,020   TIME: 10:50:19

Input Set : A:\001dv1.txt
Output Set: N:\CRF3\08022001\I912020.raw

```
236  <212> TYPE: DNA
237  <213> ORGANISM: E. Coli
239  <400> SEQUENCE: 13
240   tctaggagta agaatagctt caaattcagc agttgacagt ggcataaacg taactggtga      60
241   cttttgcccg gcatgacgcc gggctttttt tattattccg tgacttccag cgtagtgaag     120
242   gcaaacttct cgccatcaaa tagcccctga ctggttagtt ttagcgcggg gatcactggc     180
243   agagaaagaa acgccatctg aataaacggc tcatcgggta acggaccgca ttcacgggcg     240
244   gcggctttca aggcgtcaat t                                                261
246  <210> SEQ ID NO: 14
247  <211> LENGTH: 224
248  <212> TYPE: DNA
249  <213> ORGANISM: E. Coli
251  <400> SEQUENCE: 14
252   ttcttttttt cgtcaacggt gtccagaatc attttattta cctcggggta cttatgctga      60
253   ttttattat tatggggaag gtgttattta tgagtttcat ttatgccgta acgacaatga      120
254   actcgggaat tagtataagc agcgcgagaa taataatcat tgtgcaaatg ctaatttaat     180
255   taatactatt taaatattat tttgagcata tgcacataag gttg                      224
257  <210> SEQ ID NO: 15
258  <211> LENGTH: 232
259  <212> TYPE: DNA
260  <213> ORGANISM: E. Coli
262  <400> SEQUENCE: 15
263   aattcccttc ttttttcgt caacggtgtc cagaatcatt ttatttacct cgggtactta       60
264   tgctgatttt tattattatg gggaaggtgt tatttatgag tttcatttat gccgtaacga     120
265   caatgaactc gggaattagt ataagcagcg cgagaataat aatcattgtg caaatgctaa     180
266   tttaattaat actatttaaa tattattttg agcatatgca cataaggttg gg             232
268  <210> SEQ ID NO: 16
269  <211> LENGTH: 212
270  <212> TYPE: DNA
271  <213> ORGANISM: E. Coli
273  <400> SEQUENCE: 16
274   aatagcgggt atgcacgcct ttcttttttt cgtcaacggt gtccagaatc attttatta       60
275   cctcgggtac ttatgctgat ttttattatt atggggaagg tgttatttat gagtttcatt     120
276   tatgccgtaa cgacaatgaa ctcgggaatt agtataagca gcgcgagaat aataatcatt     180
277   gtgcaaatgc taatttaatt aatactattt aa                                   212
279  <210> SEQ ID NO: 17
280  <211> LENGTH: 433
281  <212> TYPE: DNA
282  <213> ORGANISM: E. Coli
284  <400> SEQUENCE: 17
285   ccttgtaaat tatcgcccgt ggcataaaaa ctgcgtccaa acgccgtctt tgccagcagc       60
286   caggccataa atgccaccag aattatcgtc aaccaaccaa ttgctgaaac gccaagcagc     120
287   agcggggcgg agagctgttt cagttcggcg ggtaaccctt caatccattt gccgccagtc     180
288   cacagcaaca tgatgcctct gtacaaccct aacgtgccaa gggtggcaac aatggcaggg     240
289   atctttagcc acgcgaccag gacaccgttg aaaaatcccg cgagcaaacc aagcagtaaa     300
290   gtcgcgacac aagcaacagg tagtgaatat cctgcgttca gtaacatccc caacagcacc     360
291   gcgcacattc cggtaatcga acccactgaa acatcaatat gcgcgtaag cattaccagc      420
292   gtcgcgccca ttg                                                        433
294  <210> SEQ ID NO: 18
```

Use of n and/or Xaa has been detected in the Sequence Listing.
Review the Sequence Listing to insure a corresponding
explanation is presented in the <220> to <223> fields of
each sequence using n or Xaa.

```
                VERIFICATION SUMMARY              DATE: 08/02/2001
                PATENT APPLICATION:  US/09/912,020    TIME: 10:50:20

                Input Set : A:\001dv1.txt
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L:19 M:270 C: Current Application Number differs, Replaced Current Application No
L:19 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:59 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:60 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:61 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:62 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:63 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:83 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:85 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:86 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:124 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5
L:125 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5
L:170 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8
L:173 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8
L:174 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8
L:213 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:230 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:231 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:330 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:378 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:379 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:380 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:381 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:382 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:383 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:427 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25
L:428 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25
L:441 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26
L:490 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28
L:516 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29
L:567 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32
L:568 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32
L:601 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
L:602 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
L:677 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39
L:681 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39
L:720 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:721 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:722 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:723 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:724 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:725 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:726 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:727 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:728 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:729 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:730 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:731 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
```

VERIFICATION SUMMARY   DATE: 08/02/2001
PATENT APPLICATION: US/09/912,020   TIME: 10:50:20

Input Set : **A:\001dvl.txt**
Output Set: **N:\CRF3\08022001\I912020.raw**

```
L:760  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44
L:781  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
L:782  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
L:783  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
L:12516 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:403
L:12527 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:404
```